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Listing of Available Documents

(Includes Selected Downloadable Documents)
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DO-275, Minimum Operational Performance Standards for Integrated Night Vision Imaging System Equipment

This document contains Minimum Operational Performance Standards (MOPS) for the aviation night vision imaging system (NVIS) used to supplement night VFR operations. NVIS consists of the night vision goggle, interior and exterior lighting, cockpit transparencies and crew station design and components. Performance and test procedures are provided for the night vision goggle and lighting. A section on continued airworthiness contains guidance to ensure the integrated NVIS equipment installation continues to meet the minimum performance standard once in operational use.

Issued 10-12-01 • Prepared by SC-196

List Price	US/Canada/Mexico	$150.00
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DO-274, Next Generation Air/Ground Communications (NEXCOM) Principles of Operation

This document characterizes the principles of operational use of integrated digital air/ground voice and data systems in the domestic National Airspace System (NAS). Ideas presented are intended to provide a framework for NAS communications subsequent to 2010. NEXCOM operational objectives, intentions and capabilities are found in section three and form the basis for success criteria used to determine system acceptability. Section four describes the operational communications services to be used for Air Traffic operations. Operational Scenarios are included that describe how air traffic operations are supported. Section five characterizes the environment within which NEXCOM is expected to operate.

Issued 10-12-01 • Prepared by SC-198

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DO-273, Response to the Report of the RTCA Chairman's Committee on NEXCOM

In response to a request from the FAA, the RTCA Chairman's Committee produced a NEXCOM report that identifies issues attendant with transitioning Air Traffic Control communications to a digital voice and data communications system. The Chairman's Report, completed in August 2000, provides observations and recommendations that highlight the need for a systems approach in addressing issues of spectrum, policy, procedure, acquisition, certification, training, facilities, and maintenance. This document reports the actions being taken by the FAA, SC-198, and the NEXCOM Aviation Rulemaking Committee that address these observations and recommendations.

Issued 10-12-01 • Prepared by SC-198

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DO-272, User Requirements for Aerodrome Mapping Information

The document provides industry requirements for airport mapping databases for aeronautical use. It identifies aeronautical applications, which may use airport-mapping databases to define airport database standards. Airport operations involve many individuals who use airport-mapping information. This document attempts to state the information requirements of these users. The expectation is that aerodrome mapping database (AMDB) originators and integrators would use this document when providing those data to system designers and/or the end-users. This document has been written under the assumption that if all users are using the same AMDB, operations can be improved, and new capabilities can be realized.

Issued 10-12-01 • Prepared by SC-193/EUROCAE WG-44

List Price	US/Canada/Mexico	$200.00
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	All other countries	$100.00

e-DO-272	
Electronic Version Downloadable From RTCA's Web Site	
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Non-Member	$250.00

DO-271, Minimum Operational Performance Standards (MOPS) for Aircraft VDL Mode 3 Transceiver Operating in the Frequency Range 117.975-137.000 MHz

The document presents the Minimum Operational Performance Standards (MOPS) and verification procedures for an aircraft Very High Frequency (VHF) Digital Link (VDL) Mode 3 transceiver, intended to be used for air-ground (A/G) voice and data communications. The standards recommended are compatible with the relevant International Civil Aviation Organization (ICAO) VDL Mode 3 Standards and Recommended Practices (SARPs) as described in RTCA DO-224A.

Issued 10-12-01 • Prepared by SC-172

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DO-270, Minimum Aviation System Performance Standards (MASPS) for the Aeronautical Mobile-Satellite (R) Service (AMS(R)S) as Used in Aeronautical Data Links

The document provides Minimum Aviation System Performance Standards for data communications utilizing aeronautical mobile satellite systems for the air-ground communications subnetwork in an Aeronautical Telecommunications Network (ATN) environment. The document focuses on data versus voice and covers a broad range of satellite systems to include the current and next generation satellites. The FANS 1/A data link environment is also addressed. Where systems are global in nature, the system may have international applications that are taken into consideration. Communications supporting the Air Traffic Service (ATS) and Aeronautical Operational Control (AOC) may be provided by one or more satellite systems, each of which has particular operating characteristics. This document anticipates that the system-specific attachment(s) will provide one means of assessing whether a particular AMS(R)S system is appropriate for a specific operational environment. The requirements for operational environments are consistent with DO-264.

Issued 10-12-01 • Prepared by SC-165

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DO-269, Concepts For Services Integrating Flight Operations and Air Traffic Management Using Addressed Data Link

Issued 6-12-01 ♦ Prepared by SC-194

This document proposes nine integrated service concepts identified from a wide list of potential services. The integrated service concepts were selected as those that may yield attractive benefits to all stakeholders through integration of Aeronautical Data Link System (ADLS) with airborne systems and/or ground automation. The services are Basic Information Exchange: 1) FMS-ATM-AOC Calibration; 2) NAS Status Information; 3) UPT Flight Planning/ Re-planning; 4) Flexible Arrival and Departure Routing; 5) Surface Movement; Reduced Separation; 6) Non-radar Environment; 7) Radar Environment; Communications Management; 8) Automatic Voice Frequency Change; and 9) Emergency Notification.

List Price	US/Canada/Mexico	$150.00
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e-DO-269	
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DO-268, Concept of Operations, Night Vision Imaging System for Civil Operators

Issued 3-27-01 ♦ Prepared by SC-196

This document describes the concept of operations supporting the implementation of aviation night vision imaging system (NVIS) technology into the National Airspace System by civilian aviation operators. Terminology, capabilities, limitations and operations for NVIS are discussed as well as training and supporting agencies. The focus of the document is the safe and efficient implementation of NVIS during various phases of flight.

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e-DO-268	
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DO-267, Minimum Aviation System Performance Standards (MASPS) for Flight Information Service Broadcast (FIS-B) Data Link

Issued 3-27-01 ♦ Prepared by SC-195

This MASPS provides a broadcast protocol for use in any broadcast medium and supports interoperability between providers of ground and airborne FIS processing systems. It provides design guidelines and recommended standards for airborne processing and display of FIS Products. The FIS-B automated, digital data link system will provide non-control, advisory information needed by pilots to operate more safely and efficiently in the National Airspace System and in international airspace including the necessary weather graphics and text, Special Use Airspace information, Notices to Airmen (NOTAMs) and other information.

The RTCA web site (www.rtca.org) contains binary test data sets that simplify the application of this MASPS. Additionally the MASPS provides pointers to compression methods that should be used to simplify the decompression process in the aircraft avionics.

List Price	US/Canada/Mexico	$135.00
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e-DO-267	
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DO-266, Government and Industry Guidelines and Concepts for NAS Analysis and Redesign

Issued 12-14-00 ♦ Prepared by SC-192

This document consists of three volumes. "Volume I: User Priorities for the National Airspace Redesign" is a summary of user comments from six recent meetings held throughout the United States. "Volume II: High Altitude Airspace Concept" defines how one segment of the NAS could provide more of the freedoms described in the Free Flight Concept while permitting transparent operation for aircraft entering from and leaving to adjacent airspace. "Volume III: Recommendations on Special Use Airspace in National Airspace Redesign" identifies known types of airspace users and describes how each of the current and future users is affected by special use airspace. It includes a vision of the future airspace system and the role special use airspace will play in the future NAS.

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e-DO-266	
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DO-265, Minimum Operational Performance Standards for Aeronautical Mobile High Frequency Data Link (HFDL)

Issued 12-14-00 ♦ Prepared by SC-188

This document encompasses standards and descriptions of a system configuration including Ground Sub-networks; HF Data Link Sub-networks, of which the aircraft is one part; and aircraft Sub-networks. However, the specified MOPS in this document address only the aircraft HF Data Link Sub-network function.

List Price	US/Canada/Mexico	$150.00
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e-DO-265	
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DO-264, Guidelines for Approval of the Provision and Use of Air Traffic Services Supported by Data Communications

Issued 12-14-00 ♦ Prepared by SC-189

This document provides guidance material intended for stakeholders and approval authorities involved in the operational implementation of the provision and use of air traffic services (ATS) supported by data communications. These communication services include those such as communication management and clearances; navigation services such as flight planning, required navigation performance (RNP) monitoring and gross navigation error (GNE) prevention and detection; surveillance services such as position and intent reporting; and services that support ATM automation.

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e-DO-264	
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DO-263, Application of Airborne Conflict Management: Detection, Prevention, & Resolution

Issued 12-14-00 ♦ Prepared by SC-186

This document presents an operational concept for the Application of Airborne Conflict Management (ACM) using Automatic Dependent Surveillance-Broadcast (ADS-B). The ACM concept includes detecting conflicts, monitoring for potential conflicts and suggesting resolutions to prevent a violation of airspace separation criteria against all other

properly equipped aircraft/vehicles. ACM is a core enabling function for the global implementation of the Free Flight concept, as it will aid pilots to fly user-preferred trajectories while avoiding conflicts with other aircraft.

List Price	US/Canada/Mexico	$96.00
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e-DO-263	
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DO-262, Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite Systems (NGSS)

Issued 12-14-00 ♦ Prepared by SC-165

This document contains MOPS for avionics that provide Aeronautical Mobile Satellite (R) System (AMS(R)S) services by means of satellite communications technologies scheduled to become operational after the year 2000. To comply with the minimum requirements of this document, an NGSS applicant is required to submit information regarding the technical characteristics of the NGSS. The technology specific technical requirements for each such system will become normative attachments to this document. It is anticipated that such technology specific attachments will be added to this document as the particular NGSS becomes operational for AMS(R)S.

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e-DO-262	
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DO-261, NAVSTAR GPS L5 Signal Specification

Issued 12-14-00 ♦ Prepared by SC-159

This Specification defines the requirements related to the signal interface between the Space Segment (SS) of the Global Positioning System (GPS) and the GPS Navigation Users for the L5 Navigation Signal.

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DO-260, Minimum Operational Performance Standards for 1090 MHz Automatic Dependent Surveillance – Broadcast (ADS-B)

Issued 9-13-00 ♦ Prepared by SC-186

This document provides the information and assumptions needed to understand the rationale for equipment characteristics and requirements. It describes equipment applications and operational goals and, along with DO-242, forms the basis for the Minimum Operational Performance Standards for the equipment.

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	All other countries	$148.00

e-DO-260	
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DO-259, Applications Descriptions for Initial Cockpit Display of Traffic Information (CDTI) Applications

Issued 9-13-00 ♦ Prepared by SC-186

This document provides a preliminary description of four potential applications utilizing a CDTI that may enhance current air traffic operations, describes underlying pilot and controller tasks and responsibilities, and derives required CDTI capabilities that enable the pilot to perform these tasks. The application definitions provide sufficient detail to allow a specification of required CDTI capabilities, so when the applications are fully developed, tested and evaluated, and certified for use, the equipment may be capable of facilitating the implementation.

List Price	US/Canada/Mexico	$90.00
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e-DO-259	
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DO-258, Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications

Issued 9-13-00 ♦ Prepared by SC-189

This document defines interoperability requirements for communication services and Air Traffic Services (ATS) applications and allocates these requirements to the stakeholders. The documents covers: the ATS Facilities Notification (ATN) application, the Automatic Dependent Surveillance (ADS) application, the Controller Pilot Data Link Communication (CPDLC) application and the ARINC data communication. The interoperability requirements included in this document supersede those of the existing DO-212 and DO-219. The additional requirements in DO-212 and DO-219 remain pertinent.

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DO-257, Minimum Operational Performance Standards for the Depiction of Navigation Information on Electronic Maps

Issued 9-13-00 ♦ Prepared by SC-181

This document contains Minimum Operational Performance Standards (MOPS) for the graphical depiction of navigation information on electronic map displays (EMDs) that are used to provide navigation information under IFR and/or VFR. The standards may be applied to vector or raster based moving map displays.

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DO-256, Minimum Human Factors Standards for Air Traffic Services Provided Via Data Communications Utilizing the ATN, Builds I and IA

Issued 6-20-00 ♦ Prepared by SC-194.

DO-256 defines minimum human factors requirements and guidelines for air traffic services (ATS) data link communications between air traffic specialist and a pilot utilizing Aeronautical Telecommunications Network (ATN). The scope is the initial Controller-Pilot Data Link Communications (CPDLC) capabilities, which comprise the Build I and Build IA

phases of the United States implementation path. CPDLC initial communications capabilities will generally encompass the transition and cruise phases of flight and be implemented in Air Route Traffic Control Centers (ARTCCs).

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DO-255, Requirements Specification for Avionics Computer Resource (ACR)

Issued 6-20-00 ♦ Prepared by SC-182

DO-255 provides the Requirements Specifications for the Avionics Computer Resource (ACR) intended to facilitate certification efficiency and economy of scale for the computer platform. These Requirements Specifications define a computer platform suitable for hosting multiple, independent software applications and are seen as an enabling step towards standardized, re-usable avionics software applications.

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DO-254, Design Assurance Guidance for Airborne Electronic Hardware

Issued 4-19-00 ♦ Prepared by SC-180

This document is intended to help aircraft manufacturers and the suppliers of aircraft electronic systems assure that electronic airborne equipment safely performs its intended function. The document identifies design life cycle processes for hardware that includes line replaceable units, circuit board assemblies, application specific integrated circuits (ASICs), programmable logic devices, etc. It also characterizes the objective of the design life cycle processes and offers a means of complying with certification requirements.

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DO-253, Minimum Operational Performance Standards for GPS Local Area Augmentation System Airborne Equipment

Issued 1-11-00 ♦ Prepared by SC-159

This document provides the Minimum Operational Performance Standards (MOPS) for Airborne Navigation Equipment Using the Global Positioning System (GPS) Augmented by the Local Area Augmentation System (LAAS). The standards in the document define minimum performance requirements, functions, and features for LAAS airborne equipment to support CAT I precision approach operations. Compliance with these standards by manufacturers, installers, and users is recommended as a means of assuring that the equipment will satisfactorily perform its intended functions under conditions encountered in routine aeronautical operations.

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DO-252, Minimum Interoperability Standards (MIS) for Automated Meteorological Transmission (AUTOMET)

Issued 1-11-00 • Prepared by SC-195

This document specifies a set of encoding and decoding rules to apply to the message format types found in the document. Message formats are independent of media and protocols used to transfer encoded AUTOMET messages. AUTOMET operational requirements are not explicitly specified. This standard ensures that all AUTOMET-compliant air- and ground-based systems will be able to decode and interpret AUTOMET uplink and downlink messages.

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DO-251, U.S. National Airspace Systems (NAS) Plan for Air Traffic Services Data Link (Phase 1, En Route CONUS Implementation)

Issued 1-11-00 • Prepared by SC-194

The "Plan" document captures the work of the data link issues team from which SC-194 evolved. This publication documents the aviation community's consensus on the evolution and implementation path for Air Traffic Services via data link utilizing the ATN in the U.S. National Airspace System.

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DO-250, Guiding Principles for Air Traffic Services Provided via Data Communications Utilizing the ATN, Builds I and IA

Issued 1-11-00 • Prepared by SC-194.

The Aeronautical Data Link System will be incrementally deployed to leverage existing and evolving technology investments and emphasize newly developed procedures in the initial steps. This publication includes sections on infrastructure, procedural requirements, data link services, and operational scenarios.

List Price	US/Canada/Mexico	$75.00
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DO-249, Development and Implementation Planning Guide for Automatic Dependent Surveillance Broadcast (ADS-B) Applications

Issued 10-6-99 • Prepared by SC-186

This planning Guide outlines suggested activities for the development and implementation of ADS-B applications. It documents the range of activities that need to be in place to bring an application from an initial concept to operational use.

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DO-248B, Final Annual Report For Clarification Of DO-178B "Software Considerations In Airborne Systems And Equipment Certification"

DO-178B was published December 1, 1992. Since that date the aviation community has gained experience using the document and has raised a number of questions regarding the document's content and application. DO-248B includes the material from the Second Annual Report, DO-248A, and adds new Frequently Asked Questions and Discussion Papers resulting from the committee's review of over 330 issues.

Issued 10-12-01 ♦ Supercedes DO-248A ♦ Prepared by SC-190/EUROCAE WG-52

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DO-247, The Role of the Global Navigation Satellite System (GNSS) in Supporting Airport Surface Operations

Issued 1-7-99 ♦ Prepared by SC-159

The report presents material on airport surface operations and relates it to the use of GNSS. It is intended that the report provide background information for airport operators/users and equipment suppliers on the role of GNSS to support airport surface operations, and to provide guidance for the further development of performance standards. The report culminates with conclusions pertaining to the use of GNSS for airport surface operations and identifies issues requiring further study.

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DO-246A, GNSS Based Precision Approach Local Area Augmentation System (LAAS) – Signal-in-Space Interface Control Document (ICD)

Issued 1-11-00 ♦ Prepared by SC-159

The revised DO-246 includes: (1) Harmonization of message types with ICAO SARPS and EUROCAE ICD (2) The most current WAAS MOPS information (3) Updates the sections and appendices affected by these changes.

List Price	US/Canada/Mexico	$150.00
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DO-245, Minimum Aviation System Performance Standards for Local Area Augmentation System (LAAS)

Issued 9-28-98 ♦ Prepared by SC-159

This document contains the Minimum Aviation System Performance Standards for the Local Area Augmentation System (LAAS), a system developed to support precision approach and landing operations and other navigation and surveillance applications, within a local area including and surrounding an airport. The LAAS is being developed to support differential GNSS-based precision approaches and landings to include Category I, II, IIIa, and IIIb Applications other than precision approach may also be supported. GPS/LAAS is intended to be interoperable with the GPS/Wide Area Augmentation System (WAAS) and to be used to provide radio navigation vertical and lateral guidance for

aviation IFR precision approach and landings from about 20 nm from the runway threshold through touchdown and rollout.

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DO-244, Government/Industry Guidelines and Concept for National Airspace Analysis and Redesign

Issued 6-8-98 ♦ Prepared by SC-192

This document contains two volumes - Volume I, entitled *A Concept Document for the Optimization of the NAS Airspace Structure*, presents concepts for a national airspace assessment and redesign that addresses significant changes to matters pertaining to the national airspace by the year 2005. Volume II, entitled *Guidelines for Conducting Airspace Analysis*, contains the general guidelines for airspace analysis, including metrics, modeling, and data requirements.

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DO-243, Guidance for Initial Implementation of Cockpit Display of Traffic Information

Issued 2-19-98 ♦ Prepared by SC-186

This document provides manufacturers a set of guidelines in the design and development of an initial set of Cockpit Display of Traffic Information (CDTI) features. CDTI is the function of presenting surveillance information about the surrounding traffic to the flight crew. This guidance document is advisory in nature and its contents are expected to be a subset of the final CDTI MOPS. That MOPS, when published, will replace this document. In order to comply with certification standards, manufacturers will be required to demonstrate that 1) CDTI meets its intended functions, and 2) CDTI does not interfere with any other aircraft systems. This interim guidance provides a description of the intended functions of CDTI and as such may aid the certification process.

List Price	US/Canada/Mexico	$90.00
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Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

e-DO-243	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$112.50

DO-242, Minimum Aviation System Performance Standards for Automatic Dependent Surveillance Broadcast (ADS-B)

Issued 2-19-98 ♦ Prepared by SC-186

This document provides a view of the system-wide operational use of ADS-B. ADS-B is a function of an aircraft or surface vehicle that periodically broadcasts its state vector and other information. Section 1 describes the ADS-B system and provides information needed to understand the rationale for system characteristics and requirements. It describes typical applications and operational goals. Section 2 describes operational requirements. It provides specific scenarios for more detailed analysis based on the applications introduced. Section 3 defines system level performance requirements, defines subsystems and allocates these requirements to subsystems. Interfaces and equipage classes are defined as well as specific ADS-B requirements. Section 4 describes minimum system test procedures. Note: Appendix D, Near-Term Applications for Initial ADS-B Implementation, provides 23 near-term cockpit applica-

tions and 14 potential near-term ADS-B ATS surveillance applications. Appendix E, Other Applications, provides 37 other applications that may be supported by ADS-B.

List Price	US/Canada/Mexico	$135.00
	All other countries	$180.00
Member Price	US/Canada/Mexico	$54.00
	All other countries	$72.00

e-DO-242	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$168.75

DO-241, Operational Concepts and Information Elements Required to Improve Air Traffic Management (ATM) Aeronautical Operational Control (AOC) Ground-Ground Information Exchange to Facilitate Collaborative Decision Making

Issued 10-6-97 ♦ Prepared by SC-169

The document identifies information to be exchanged by the ATM system and AOCs using automation and ground-ground communications. It identifies information needed for both domestic and oceanic operations. The information presented extends beyond what is necessary for today's operation paradigm to include requirements that will facilitate more user flexibility in the future. Operational scenarios are included.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

e-DO-241	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$112.50

DO-240, Minimum Operational Performance Standards for Aeronautical Telecommunication Network (ATN) Avionics

Issued 7- 29-97 ♦ Prepared by SC-162

This document provides standards for Aeronautical Telecommunication Network functions for aircraft systems and equipment. These standards are in the form of performance criteria for ATN functions; qualification criteria for demonstrating performance requirements; descriptions of evidence that indicate that performance objectives have been satisfied. Performance objectives, qualification and evidence are discussed as they relate to satisfying the requirements for airworthiness approval of ATN functions. The functions covered by the MOPS can be incorporated in a wide variety of hardware configurations onboard an aircraft. Section 2 of the document expresses the requirements for airborne ATN systems. Section 3 describes the means of qualification by providing an overview of the testing process and listing detailed tests.

List Price	US/Canada/Mexico	$75.00
	All other countries	$112.50
Member Price	US/Canada/Mexico	$30.00
	All other countries	$45.00

e-DO-240	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$93.75

DO-239, Minimum Operational Performance Standards for Traffic Information Service (TIS) Data Link Communications

Issued 4-2-97 ♦ Errata Issued 10-17-97 ♦ Prepared by SC-169

This document presents requirements for the aircraft equipment associated with Traffic Information Service Data Link (TISDL) communications. The TIS data link function is intended to improve the safety and efficiency of "see and avoid" flight by providing pilots with automatic display of nearby traffic and warnings of any potentially threatening conditions. The source of TIS information is the file of aircraft tracks maintained by the ground Mode S sensor providing coverage for a region of airspace. TIS generates alerts for any traffic aircraft in Mode S coverage that carry a transponder (ATCRBS or Mode S). TIS provides traffic advisories similar to those of TCAS-1, but does not provide resolution

advisories. Section 1 provides information and assumptions needed to understand the rationale for equipment characteristics and requirements. Section 2 contains the minimum performance standards for the equipment. Section 3 describes the performance required of the installed equipment and Section 4 describes the operational performance characteristics for equipment installations.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

DO-238, Human Engineering Guidance for Data Link Systems

Issued 4-2-97 ♦ Prepared by SC-169

This document sets forth general, functional, procedural, and design criteria and recommendations concerning human engineering of data link systems. The document focuses primarily on recommendations for data link communications between an air traffic specialist and a pilot. The document is intended as a guide for the development and evaluation of data link systems.

List Price	US/Canada/Mexico	$75.00
	All other countries	$105.00
Member Price	US/Canada/Mexico	$30.00
	All other countries	$42.00

e-DO-238	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$93.75

DO-237, Aeronautical Spectrum Planning for 1997- 2010

Issued 1-27-97 ♦ Prepared by SC-185

The report examines aeronautical Communications, Navigation, and Surveillance (CNS) services to determine the spectrum requirements of existing and planned new systems. It represents a major effort by the aeronautical community to assess "the state of the spectrum" as requirements change and new technologies are introduced.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

DO-236A, Minimum Aviation System Performance Standards: Required Navigation Performance for Area Navigation

Issued 9-13-00 ♦ Supersedes DO-236 ♦ Prepared by SC-181

This document contains Minimum Aviation System Performance Standards (MASPS) for area navigation systems operating in an RNP environment. DO-236A provides new or expanded requirements primarily for the RNP VNAV and Time of Arrival control functions. Additional changes from the initial publication have also been included. Many new figures are included.

List Price	US/Canada/Mexico	$150.00
	All other countries	$195.00
Member Price	US/Canada/Mexico	$60.00
	All other countries	$78.00

e-DO-236A	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$187.50

DO-235, Assessment of Radio Frequency Interference Relevant to the GNSS

Issued 1-27-97 ♦ Prepared by SC-159

This report identifies potential sources of radio frequency interference (RFI) and assesses the vulnerability of GPS and GLONASS receivers to that interference. Candidate mitigation techniques are also examined, and selected techniques are recommended for adoption in appropriate standards.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

e-DO-235	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$112.50

DO-234, Minimum Performance and Installation Standards for Runway Guard Lights (RGLs)

Issued 11-15-96 ♦ Prepared by SC-184

This document contains minimum performance and installation standards for elevated and in-pavement runway guard lights (RGLs). These standards provide guidance to designers, installers, manufacturers, service providers and users of these lights. RGLs are used to enhance the conspicuity of the runway holding position at airports and are useful for low visibility operations, situational awareness by pilots and vehicle drivers, and runway incursion prevention.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

DO-233, Portable Electronic Devices Carried on Board Aircraft

Issued 8-20-96 ♦ Errata Issued 8-18-99 ♦ Prepared by SC-177

This document addresses the potential interference to installed aircraft electrical and electronic systems from Portable Electronic Devices (PEDs) carried aboard by passengers. It defines the potential interference phenomena; outlines the risk potential from interference events; provides test methods to determine whether or not a potential for interference exists for certain PEDs, aircraft and combinations thereof; and addresses acceptable levels of interference. The report also recommends modification of Federal Aviation Regulation 91.21, continued PEDs testing to identify and better define the possibility of interference to aircraft electronic systems, increased public awareness of the potential for interference from PEDs, and the development and use of devices to detect spurious PEDs emissions.

List Price	US/Canada/Mexico	$105.00
	All other countries	$142.50
Member Price	US/Canada/Mexico	$42.00
	All other countries	$57.00

e-DO-233	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$131.25

DO-232, Operations Concepts for Data Link Applications of Flight Information Services

Issued 3-13-96 ♦ Prepared by SC-169

This document provides the framework for development of future FIS data link systems and associated MOPS. The document is designed to: present the user's perspective of operational concepts and system characteristics for FIS data link applications; identify, describe, and prioritize the FIS data link products and services needed to support both

current and future flight operations in the National Airspace System, including international oceanic operations; identify infrastructure barriers to successful implementation and utilization of the priority FIS products.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

DO-231, Design Guidelines and Recommended Standards for the Implementation and Use of AMS(R)S Voice Services in a Data Link Environment

Issued 3-13-96 ♦ Prepared by SC-165

This document contains functional and interface requirements for the implementation and use of Aeronautical Mobile Satellite Service (AMSS) voice communications in an environment where satellite voice is a required capability. The information contained herein describes satellite voice services in the Air Traffic Management (ATM) and Aeronautical Operational Control (AOC) environments-including requirements for aircraft installations, satellite services, ground interconnection facilities, and Air Traffic Service facility capabilities. The scope of this document is focused primarily on the use of satellite voice in Oceanic and Remote airspace areas.

List Price	US/Canada/Mexico	$120.00
	All other countries	$157.00
Member Price	US/Canada/Mexico	$48.00
	All other countries	$62.80

DO-230, Standards for Airport Security Access Control Systems

Issued 3-13-96 ♦ Prepared by SC-183

This document contains minimum performance standards and guidelines for Airport Security Access Control Systems (ACS) to ensure such systems comply with the Code of Federal regulations (CFR), title 14 (Federal Aviation Regulations, Part 107.14). These standards present the functional requirements and performance characteristics for use by designers, manufacturers, service providers, operators, and users of automated ACSs intended for operational use within the United States National Airspace System (NAS). This material should also be useful to airport operators as a tool to assist in obtaining Airport Improvement Program (AIP) funding.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

DO-229B, Minimum Operational Performance Standards for Global Positioning System/Wide Area Augmentation System Airborne Equipment

Issued 10-6-99 ♦ Supersedes DO-229A ♦ Prepared by SC-159

This document contains minimum operational performance standards (MOPS) for airborne navigation equipment (2D and 3D) using the Global Positioning System (GPS) augmented by the Wide Area Augmentation System (WAAS). The changes to RTCA DO-229A include: information to ensure consistency with ICAO SBAS SARPS, information in support of ionospheric correction calculations, Appendix Q - WAAS Requirements for Helicopters, and updates to the Sections and Appendices affected by these changes. The regulatory application of these standards is the responsibility of appropriate government agencies. In the United States, the Federal Aviation

Administration (FAA) plans to publish Technical Standard Order (TSO) C-145 and C-146 for GPS/WAAS equipment. TSO C-146 will reference the requirements and bench tests procedures in Section 2.

TSO-C145 provided free of charge with purchase of this document .

List Price	US/Canada/Mexico	$216.00
	All other countries	$288.00
Member Price	US/Canada/Mexico	$86.40
	All other countries	$115.20

e-DO-229B	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$270.00

DO-228, Minimum Operational Performance Standards for Global Navigation Satellite Systems (GNSS) Airborne Antenna Equipment

Issued 10-20-95 ♦ Prepared by SC-159

Defines the antenna performance for antennas that will be used with GNSS receiver equipment. Contains Minimum Operational Performance Standards (MOPS) for GNSS airborne antenna equipment designed to use GPS or GLONASS augmented by other systems/equipment/techniques as appropriate to meet the performance requirements for primary means of navigation for en route, terminal, non-precision, and precision approach phases of flight. Incorporated within these standards are equipment characteristics that should be useful to users, designers, manufacturers, and installers of equipment.

List Price	US/Canada/Mexico	$82.80
	All other countries	$110.00
Member Price	US/Canada/Mexico	$33.00
	All other countries	$44.00

e-DO-228	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$103.50

Change 1 to DO-228

Issued 1-11-00 ♦ Prepared by SC-159

This change was developed in response to inputs from antenna manufactures. Changes include references to RTCA DO-160D vice DO-160C, updates minimum frequency range, axial ration, frequency selectivity requirements, and differential group delay to insure airborne equipment is protected by the LAAS and WAAS ground monitoring facilities during precision approach operations.

List Price	No Charge
Member Price	No Charge

Change 1 to e-DO-228
Electronic Version Downloadable From RTCA's Web Site
No Charge

DO-227, Minimum Operational Performance Standards for Lithium Batteries

Issued 6-23-95 ♦ Prepared by SC-168

Contains both requirements and general guidelines regarding the design, testing, application, handling, storage, and disposal of lithium cells and batteries. It provides designers, manufacturers, and users of equipment installed in aircraft with information on the performance characteristics and operating and environmental limitations of lithium cells and batteries powering such equipment. Two categories of maximum cell and battery sizes are identified.

Category I: Solid-cathode cells that contain less than 0.15 grams of lithium or lithium alloy, and batteries that use not more than four such cells.

Category II: Liquid-cathode cells that contain less than 0.15 grams of lithium or lithium alloy, or batteries comprised of these cells. Cells that contain 0.15 to not more than 5 grams of lithium or lithium alloy. Batteries that contain not more

than 25 grams lithium or lithium alloy. Cells containing more than 5 grams of lithium or lithium alloy, or batteries that contain more than 25 grams of lithium or lithium alloy are beyond the scope of this document.

TSO-C97 provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$105.00
	All other countries	$142.50
Member Price	US/Canada/Mexico	$42.00
	All other countries	$57.00

DO-226, Guidance Material for Evolving Airborne Precision Area Navigation Equipment with Emphasis on MLS

Issued 5-25-95 ♦ Superseded DO-198 (SC-151) ♦ Prepared by SC-171

This document spans a decade of work by two RTCA Special Committees (151/171). During this period, alternative technologies to the Microwave Landing System (e.g., satellite navigation) have evolved. Yet the need for precision, near-airport area navigation continues. Whatever the navigation source for an operational capability, much of the material in this document is germane to any precision, terminal-area navigation system. The philosophy used in preparing the document was to provide guidance for any terminal area navigation system, although the specific performance requirements and test procedures assume the MLS Random (Area) Navigation (RNAV) sensor inputs.

List Price	US/Canada/Mexico	$135.00
	All other countries	$180.00
Member Price	US/Canada/Mexico	$54.00
	All other countries	$72.00

DO-225, VHF Air-Ground Communications System Improvements Alternatives Study and Selection of Proposals for Future Action

Issued 11-17-94 ♦ Prepared by SC-172

This report represents a broad study of very high frequency (VHF) air-ground communications system improvements. The study includes: (1) gaining an understanding of the present VHF air-ground communications system, (2) developing future Air Traffic Service (ATS) and Aeronautical Operational Control (AOC) communications functional requirements and desirable features, (3) studying present system improvements, (4) selecting a future system candidate to pursue towards implementation, and (5) developing recommendations resulting from this study. Seven candidate future system alternatives were evaluated against future system requirements and desirable features and as a result of this study, six recommendations to pursue present and future system improvements were adopted.

List Price	US/Canada/Mexico	$105.00
	All other countries	$142.50
Member Price	US/Canada/Mexico	$42.00
	All other countries	$57.00

DO-224A, Signal-in-Space Minimum Aviation System Performance Standards (MASPS) for Advanced VHF Digital Data Communications Including Compatibility with Digital Voice Techniques

Issued 9-13-00 ♦ Supercedes DO-224 and Changes ♦ Prepared by SC-172

This is the first complete VDL Mode 2 and 3 Version Downloadable of the MASPS. This change defines new terms. It updates some VDL Mode 2 sections especially in the physical layer. It also adds essentially a new, complete Section

3.3 VDL Mode 3 pertaining to the functionally simultaneous voice and data link capability of the Time Division Multiple Access (TDMA) architecture, and adds five new appendices needed for VDL Mode 3.

List Price	US/Canada/Mexico	$216.00
	All other countries	$288.00
Member Price	US/Canada/Mexico	$86.40
	All other countries	$115.20

e-DO-224A	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$270.00

Change 1 to DO-224A

Issued 10-12-01 ♦ Prepared by SC-172

This Change provides important link budgets for VHF data link and it is applicable to both VDL Mode 2 and VDL Mode 3. The change adds new definitions, new sections, and replaces some sections and updates, corrects and replaces some tables. A new Appendix L was added and specific VDL Mode 3 updates were completed for certain Sections.

List Price	US/Canada/Mexico	$48.00
	All other countries	$60.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 1 to e-DO-224A	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$75.00

DO-223, Minimum Operational Performance Standards for Context Management (CM) Equipment

Issued 7-13-94 ♦ Prepared by SC-169

Identifies aircraft equipment requirements to support the forwarding of addresses, such as "log-on", between aircraft systems and ground systems. Context management will support Air Traffic Service communications, such as ATC Two-Way Data Link communications, Automatic Dependent Surveillance, Flight Information Services, as well as satellite voice and Aeronautical Operational Communications. Broadcast communications will probably not use context management.

List Price	US/Canada/Mexico	$82.80
	All other countries	$110.00
Member Price	US/Canada/Mexico	$33.00
	All other countries	$44.00

DO-222, Guidelines on AMS(R)S Near-Term Voice Implementation and Utilization

Issued 4-29-94 ♦ Errata Issued 6-21-94 ♦ Prepared by SC-165

Contains operational guidelines and recommendations for the implementation and utilization of Aeronautical Mobile Satellite (Route) Services, voice communication functions in the near-term (circa 1993-1996) air traffic environment. It presents a system-level view of how satellite voice services can be implemented and used in the Air Traffic Services (ATS) and Aeronautical Operational Control (AOC) environments inclusive of aircraft installation requirements, ground infrastructure requirements, and available AMS(R)S services. This document defines the functions and performance needed to facilitate the development, implementation, certification, and operational use of satellite voice in an environment where satellite voice communication is not yet a required capability for air navigation. It uses as its basis the existing standards for satellite avionics and ground equipment. It should be useful to designers, manufacturers, installers, and operators of equipment used in AMSS voice service.

List Price	US/Canada/Mexico	$105.00
	All other countries	$142.50
Member Price	US/Canada/Mexico	$42.00
	All other countries	$57.00

DO-221, Guidance and Recommended Requirements for Airport Surface Movement Sensors

Issued 4-29-94 ♦ Prepared by SC-178

Provides recommended standards for both sensor and system characteristics. The primary purpose for these sensors is to operate stop bars located on taxiways which provide entrance to low visibility runways. The sensors may also be used for other low visibility functions such as taxiway light sequencing, runway exiting notification, and presence detection. This document provides guidance to airport system designers, manufacturers, installers, and users.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

DO-220, Minimum Operational Performance Standards (MOPS) for Airborne Weather Radar with Forward-Looking Windshear Detection Capability

Issued 9-21-93 ♦ Prepared by SC-173 ♦ Change 1 issued 6-23-95

Incorporates new radar technology and serves as a standard for both air carrier and general aviation aircraft. It considers those requirements and technologies pertinent to general aviation, where limitations on space and/or weight apply. Compliance with these standards by manufacturers, installers, and users is recommended as one means of assuring the equipment will perform its intended function under conditions normally encountered in routine aeronautical operations.

TSO-C117a provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$105.00
	All other countries	$142.50
Member Price	US/Canada/Mexico	$42.00
	All other countries	$57.00

Change 1 to DO-220

Issued 6-23-95

Change 1 adds new data contained within the NASA Windshear Simulation Data Sets, standard deviation of rain velocities calculated by AWDRS, and expanded explanatory notes to the data sets.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-219, Minimum Operational Performance Standards for ATC Two-Way Data Link Communications

Issued 8-27-93 ♦ Prepared by SC-169

Presents the requirements for Two-Way Data Link Communication (TWDL) services. TWDL services include predeparture clearance, clearances, reports, and requests. In addition to testing standards, the document includes functional, performance, interface, and equipment standards for “ATCCOMM.” The term “ATCCOMM” as used in this

document includes all components and units, including software, necessary for the aircraft equipment to support TWDL services with an ATC ground system peer via the Aeronautical Telecommunications Network (ATN).

List Price	US/Canada/Mexico	$105.00
	All other countries	$142.50
Member Price	US/Canada/Mexico	$42.00
	All other countries	$57.00

e-DO-219	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$131.25

DO-218B, Minimum Operational Performance Standards for the Mode S Airborne Data Link Processor

Issued 6-12-01 • Supersedes DO-218A • Prepared by SC-187

This document updates DO-218A by incorporating appropriate material to recognize changes made by ICAO to the Mode S System SARPs and the Mode S Subnetwork SARPs.

List Price	US/Canada/Mexico	$220.00
	All other countries	$275.00
Member Price	US/Canada/Mexico	$88.00
	All other countries	$110.00

e-DO-218B	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$275.00

DO-217, Minimum Aviation System Performance Standards DGNSS Instrument Approach System: Special Category 1 (SCAT-1) Revised to Include Change 1

Issued 8-27-93 • Prepared by SC-159 • Change 1, Issued 7-13-94

Errata Reprinted in April 1995 to include Change 1

Provides the guidelines for a system to support differential GNSS (DGNSS) special instrument approaches. Requested by the FAA and consistent with the recommendations of the RTCA GNSS Task Force Report, the recommended standards in this document are specifically oriented toward supporting Special Category I precision approaches, specially authorized approaches made to MLS/ILS Category I minima with DGNSS used to provide navigation guidance. These approaches are expected to be authorized for specific aircraft approaching specific airports; thereby, providing the civil aviation community the basis for developing precision approaches using satellite technology.

List Price	US/Canada/Mexico	$150.00
	All other countries	$195.00
Member Price	US/Canada/Mexico	$60.00
	All other countries	$78.00

e-DO-217	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$187.50

Note: For those who currently possess a copy of DO-217 printed before April 1994, the following change may be purchased separately. The prices above reflect the inclusion of Change 1 into the body of the document.

Change 1 to DO-217

Issued 8-13-94

Replaces the original Appendix F with one method of implementing the differential message format described in Appendix A, using VHF data link. The data link characterized is more robust and may provide growth potential for Category II/III precision approaches. This change is included in the April 1995 printing of DO-217.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 2 to DO-217

Issued 11-15-96

This document recognizes the technology developments since the original issuance of DO-217 in August 1993. While RTCA/DO-217 including this change does not guarantee interoperability with a future GNSS CAT-I system, this change does address interoperability among SCAT I systems and provides a means to improve interoperability.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 2 to e-DO-217	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$60.00

DO-216, Minimum General Specification for Ground-Based Electronic Equipment

Issued 7-14-93 ♦ Prepared by SC-175

Contains general specification for the procurement of ground-based electronic equipment by the Federal Aviation Administration. This material incorporates industry standards to facilitate use of Commercial Off The Shelf/Non-Development Items (COTS/NDI). This updated Version Downloadable of FAA Standard G-2100e also contains revised quality assurance provisions and is expected to be used as a key element in FAA future procurement.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

DO-215A, Guidance on Aeronautical Mobile Satellite Service (AMSS) End-to-End System Performance

Issued 2-21-95 ♦ Prepared by SC-165 ♦ Superseded DO-215

This document contains guidance for the system and service requirements performance, availability, and integrity for an End-to-End System providing Aeronautical Mobile Satellite Services (AMSS) to end users. The primary elements of the End-to-End System are also considered individually. The material should be useful to users, designers, manufacturers, and installers of the AMSS system and its elements.

List Price	US/Canada/Mexico	$105.00
	All other countries	$142.50
Member Price	US/Canada/Mexico	$42.00
	All other countries	$57.00

Change 1 to DO-215A

Issued 9-28-98

DO-215 originally published May 1993, was updated as DO-215A in February 1995. It offers the only currently published guidance for performance, integrity, and availability for data and voice over end-to-end links and their individual subsystems. New AMSS development activities in industry and government require criteria for establishing their feasibility and acceptability. DO-215A is in widespread use in those regards, and will fill those needs until a new AMSS MASPS is available. This change provides needed clarifications and corrections required for applying DO-215A methodologies to an evolved geo-stationary satellite communications system.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

DO-214, Audio Systems Characteristics and Minimum Operational Performance Standards for Aircraft Audio Systems and Equipment

Issued 3-2-93 • Superseded DO-170 • Prepared by SC-164

Defines audio systems response characteristics that affect the intelligibility of air-ground speech communication including review and evaluation of design measures giving promise of audio response characteristics. It recommends a means for improvement by users and designers of communications equipment. In addition to postulating goals and applications, it recommends minimum standards and test procedures for aircraft microphones (except carbon), aircraft headsets, handsets and loudspeakers, and aircraft audio systems.

List Price	US/Canada/Mexico	$82.80
	All other countries	$110.00
Member Price	US/Canada/Mexico	$33.00
	All other countries	$44.00

e-DO-214	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$103.50

DO-213, Minimum Operational Performance Standards for Nose-Mounted Radomes

Issued 1-14-93 • Prepared by SC-173 • Change 1 issued 6-23-95

Contains minimum operational performance standards for radomes for use with airborne doppler weather radars having forward-looking windshear detection capability and for use with airborne weather radars. These standards specify radome characteristics for designers, manufacturers, installers, and users of the equipment.

List Price	US/Canada/Mexico	$75.00
	All other countries	$105.00
Member Price	US/Canada/Mexico	$30.00
	All other countries	$42.00

e-DO-213	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$93.75

Change 1 to DO-213

Issued 6-23-95

Change 1 adds definitions for "Transmission Efficiency, Minimum," and "Transmission Efficiency, Average." The change also includes new material in Section 2.1.5, Maintenance Performance Rules and Section 2.1.6, Documentation and Identification; redefines "Side Lobe Upper Limits."

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 1 e-DO-213	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$60.00

DO-212, Minimum Operational Performance Standards for Airborne Automatic Dependent Surveillance (ADS) Equipment

Issued 10-26-92 • Prepared by SC-170

Addresses application of the ADS function and recommends standards for Automatic Dependent Surveillance (ADS) hardware. The document provides assumptions and information needed to understand the rationale for equipment requirements and characteristics. The standard defines required performance under standard operating conditions and stressed physical environment conditions.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

e-DO-212	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$112.50

DO-211, User Requirements for Future Airport and Terminal Area Communications, Navigation, and Surveillance

Issued 10-26-92 ♦ Prepared by SC-166

Presents a comprehensive statement of user requirements for the next quarter century (to the year 2015). It examines the potential capabilities of developmental and proposed communications, navigation, and surveillance (CNS) systems and Air Traffic Management as they could apply in terminal areas and at airports. The report examines current US plans for the terminal area airspace and airports in light of the limitation of the existing air traffic management system, and addresses emerging technologies that could help meet future needs. A number of conclusions and recommendations are offered for meeting user requirements and assuring a smooth transition.

List Price	US/Canada/Mexico	$82.80
	All other countries	$110.00
Member Price	US/Canada/Mexico	$33.00
	All other countries	$44.00

DO-210D, Minimum Operational Performance Standards (MOPS) for Geosynchronous Orbit Aeronautical Mobile Satellite Services (AMSS) Avionics

Issued 4-19-00 ♦ Prepared by SC-165

This standard addresses Aeronautical Mobile Satellite Services operating in the frequency bands 1.5 and 1.6 GHz. DO-210D updates DO-210C and contains new material regarding Inmarsat Aero H+/I services, intermediate-gain antenna, channel descriptions, related physical layer and management characteristics, and the 4.8 kbps Advanced Multiband Excitation (AMBE) voice codec. New verification procedures related to priority, precedence, and preemption are also included. Revisions relate to the Aero H+/I services, clarifications of requirements, and a review of verification procedures with respect to the Inmarsat System Definition Manual as well as ICAO Standards and Recommended Practices. The document includes equipment performance requirements, recommended bench tests and other performance verification procedures, and installed equipment tests and operational performance characteristics. DO-210D supercedes DO-210C and should be useful to designers, manufacturers, installers, and users of the AMSS system and equipment.

List Price	US/Canada/Mexico	$180.00
	All other countries	$255.00
Member Price	US/Canada/Mexico	$72.00
	All other countries	$102.00

e-DO-210D	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$225.00

Change 1 to DO-210D

Issued 12-14-00

Electromagnetic Compatibility (EMC) issues existed which required resolution to ease the process of issuing a FAA Technical Standard Order (TSO) implementing DO-210 D. This change addresses those EMC issues.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 1 to e-DO-210D	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$60.00

DO-209, Minimum Operational Performance Standards for Devices that Prevent Blocked Channels Used in Two-Way Radio Communications Due to Simultaneous Transmissions

Issued 4-23-92 • Errata Issued 7-1-92 • Prepared by SC-163

Sets forth goals and applications and recommends standards and procedures for systems that provide a means for reducing simultaneous transmissions that adversely affect two-way voice radio communications. This specification is applicable to ground-based, ground-mobile, and airborne two-way UHF and VHF voice radio communications equipment used for intercommunication and control of air traffic.

List Price	US/Canada/Mexico	$75.00
	All other countries	$105.00
Member Price	US/Canada/Mexico	$30.00
	All other countries	$42.00

DO-208, Minimum Operational Performance Standards for Airborne Supplemental Navigation Equipment Using Global Positioning System (GPS)

Issued 7-12-91 • Change 1 Issued 9-21-93 • Prepared by SC-159

Sets forth the operational goals and applications, and recommends standards and test procedures for airborne supplementary navigation equipment (2D and 3D) using Global Positioning System (GPS) inputs in the en route, terminal, and approach modes or any combination thereof. A supplemental navigation system may be used as a primary navigation reference in an aircraft when an approved and operational sole means navigation system is available. The report defines performance, functions, and features for 2D airborne equipment, which performs only lateral guidance, and 3D equipment, which performs both lateral and vertical guidance.

TSO-C129a provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$90.00
	All other countries	$117.00
Member Price	US/Canada/Mexico	$36.00
	All other countries	$46.80

e-DO-208	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$112.50

Change 1 to DO-208

Issued 9-21-93 • Errata Issued 3-16-95

Change 1 provides editorial changes to subparagraphs on Marginal Geometry Tests, Good Geometry Tests, and Dynamic Tests. Appendix B has been rewritten to provide corrected computations to calculate geodesics on the WGS-84 ellipsoid. A new Appendix K provides simulation of a second-order Gauss-Markov process.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 1 to e-DO-208	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$60.00

DO-207, Minimum Operational Performance Standards for Devices that Prevent Blocked Channels Used in Two-Way Radio Communications Due to Unintentional Transmissions

Issued 1-25-91 • Prepared by SC-163

Recommends standards and procedures for systems that reduce unintentional transmissions and prevent blocked frequencies that adversely affect two-way voice radio communications. This specification is applicable to ground-

based, ground-mobile, and airborne two-way VHF and UHF radio voice communications equipment used for control of air traffic.

TSO-C128 provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

DO-206, Minimum Aviation System Performance Standards for Radiodetermination Satellite Service (RDSS)

Issued 2-12-90 ♦ Prepared by SC-161

Sets forth a system description for the Radiodetermination Satellite Service (RDSS). Provides a description of non-safety-related functional capabilities that may be provided by and RDSS system implemented for civil aviation users.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-204, Minimum Operational Performance Standards for 406 MHz Emergency Locator Transmitters (ELT)

Issued 9-29-89 ♦ Change 1 Issued 7-13-94 ♦ Prepared by SC-160

Sets forth goals and applications and recommends standards and test procedures for emergency locator transmitters (ELTs) utilizing the 406.0 to 406.1 MHz band and operating in the COSPAS-SARSAT system. The 406 MHz ELTs are intended to be optional adjuncts to 121.5/243.0 MHz ELTs. Includes test conditions and procedures for installed equipment performance. Coordinated with EUROCAE.

TSO-C126 provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 1 to DO-204

Issued 7-13-94

Reflects the requirement for Survival Equipment ELTs to radiate a visual signal indicating that the unit is operating. Use of an aural indicator is optional; however, if an aural monitor is also installed, users must have the capability to override the aural monitor without compromising the visual indicator.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 2 to DO-204

Issued 10-6-97

The change makes several editorial changes to the basic document and provides a new Appendix A which references COSPAS-SARSAT documents for message formats. DO-204 retains its importance for ELT equipment requirements and test standards.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 3 to DO-204

Issued 6-12-01

The international Cospas-Sarsat organization has determined that the number of messages transmitted by Emergency Locator Transmitters (ELTs), Emergency Position Indicating Radio Beacons (EPIRBs) and Personal Locator Beacons (PLBs) on 406.025 may exceed channel capacity. In order to alleviate this situation, the Cospas-Sarsat organization has elected to open a new channel on 406.028 MHz and to tighten the specification for the beacon's initial frequency setting. Change 3 to DO-204 includes the new requirements to harmonize the RTCA document with the Cospas-Sarsat decision.

Change 3 to DO-204 is provided free of charge.

Change 3 to e-DO-204	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	No Charge

DO-202, Report of Special Committee 159 on Minimum Aviation System Performance Standards (MASPS) for Global Positioning System (GPS)

Issued 11-28-88 ♦ Prepared by SC-159

Reports on the Global Positioning System (GPS), and related parameters, for operation and use of a GPS-based navigation system by civil users of the airspace. The report considers the use of GPS both as a supplemental and as a sole means system for en route, terminal area, and non-precision approach operations.

Integrity monitoring requirements are presented with a discussion of suitable methods for determining GPS integrity and broadcasting this information to civil aeronautical users. Coordinated with EUROCAE.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

e-DO-202	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$60.00

DO-201A, Standards for Aeronautical Information

Issued 4-19-00 ♦ Prepared by SC-181

This document provides for the improved operational effectiveness of airborne navigation systems that use stored databases. It presents a collection of disciplines necessary to provide assurance that aeronautical information used by the aviation industry meets the high quality and integrity for safe flight. The information in the document has been compiled for the purpose of stating aeronautical information requirements of the aviation industry with emphasis on RNAV operations in RNP airspace. There is focus on the importance of quality aeronautical information and the fact that the evolution of computer navigation technology requires a greater dependency on the accuracy, reliability,

integrity, and timely availability of navigation reference data than ever before. This is a joint RTCA/EUROCAE document.

List Price	US/Canada/Mexico	$144.00
	All other countries	$187.20
Member Price	US/Canada/Mexico	$57.60
	All other countries	$74.80

e-DO-201A	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$180.00

DO-200A, Standards for Processing Aeronautical Data

Issued 9-28-98 • Prepared by SC-181

This document provides the minimum standards for the processing of aeronautical data that are used for navigation, flight planning, terrain awareness, flight simulators and for other purposes. The standards cover data processing quality assurance and quality management requirements. They provide the user the necessary assurance that delivered aeronautical databases meet the appropriate quality requirements for the data. DO-206A supports new technology and the expanding scope of aeronautical data by providing a more structured approach to the extremely important issues of data quality and data integrity management.

List Price	US/Canada/Mexico	$135.00
	All other countries	$180.00
Member Price	US/Canada/Mexico	$54.00
	All other countries	$72.00

e-DO-200A	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$168.75

DO-199, Potential Interference to Aircraft Electronic Equipment from Devices Carried Aboard

Issued 9-16-88 • Superseded DO-119 • Prepared by SC-156

Reports on the investigation to determine potential interference effects to aircraft electronic systems due to emissions from self-powered portable electronic and electrical devices operated aboard aircraft. Recommends regulatory actions relating to operation and identification of passenger-operated devices to assure control of possible sources of interference and recommends standardized procedures for reporting suspected interference. Volume I is the basic report and includes background, data collection, data analysis, conclusions, and recommendations. Volume II provides amplification or background material for some of the summary data included in the basic report.

Vol. I List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00
Vol. II List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00

e-DO-199 Vol. I	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$78.75

e-DO-199 Vol. II	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$78.75

DO-197A, Minimum Operational Performance Standards for an Active Traffic Alert and Collision Avoidance System I (Active TCAS I)

Issued 9-12-94 • Errata 11-22-94 • Superseded DO-197 • Prepared by SC-147

Pertains to aircraft with up to 30 passenger seats as prescribed by the Federal Aviation Administration (FAA) TCAS rules. Active TCAS I is an air-to-air interrogation device that provides traffic advice to the flight crew by alerting them to the presence of a nearby transponder- equipped aircraft and advising the crew where to look for that aircraft so it can

be visually acquired and avoided if necessary. Unlike TCAS II and TCAS III, Active TCAS I does not provide conflict resolution advisories.

TSO-C118 provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$82.80
	All other countries	$110.00
Member Price	US/Canada/Mexico	$33.00
	All other countries	$44.00

e-DO-197A	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$103.50

Change 1, DO-197A

Issued 7-29-97

Analysis of data recorded from TCAS I equipped aircraft indicated that the TCAS I interference limiting algorithms were causing acquisition of intruders at low ranges and that the tracks were often intermittent. This change enhances the minimum TCAS I surveillance performance by refining the assumptions used in development of the original interference limiting algorithms. These modifications provide a significant operational benefit to the operators of TCAS I equipment, without increasing the total amount of interrogation power transmitted by TCAS I equipped aircraft. Power is reallocated to more closely reflect the actual operating environment.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-196, Minimum Operational Performance Standards for Airborne VOR Receiving Equipment Operating within the Radio Frequency Range of 108- 117.95 Megahertz

Issued 11-17-86 • Superseded DO-149 and DO-153A • Prepared by SC-153

Sets forth operational goals and applications, and recommends standards and test procedures for airborne VHF Omnirange (VOR) receiving equipment. Coordinated with EUROCAE.

TSO-C40c provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

e-DO-196	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$60.00

DO-195, Minimum Operational Performance Standards for Airborne ILS Localizer Receiving Equipment Operating within the Radio Frequency Range of 108- 112 Megahertz

Issued 11-17-86 • Superseded DO-131A • Prepared by SC-153

Postulates operational goals and applications, and recommends standards and test procedures for airborne ILS localizer receiving equipment. Coordinated with EUROCAE.

TSO-C36e provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

e-DO-195	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$60.00

DO-194, Minimum Operational Performance Standards for Airborne Area Navigation Equipment Using Loran-C Inputs

Issued 11-17-86 ♦ Superseded DO-159 ♦ Prepared by SC-137

Sets forth operational goals and applications, and recommends standards and test procedures for airborne area navigation equipment (2D and 3D) using Loran-C inputs. Includes test conditions and procedures for installed Loran-C receiving equipment performance and operational characteristics with test procedures. Coordinated with EUROCAE.

TSO-C60b provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00

DO-193, User Requirements for Future Communications, Navigation, and Surveillance Systems, Including Space Technology Applications

Issued 9-19-86 ♦ Prepared by SC-155

Reports on the operational requirements for communications, navigation, and surveillance services likely to be required in the 2010 time frame as foreseen by airspace users. Investigates new concepts and technology, including the use of satellites, which may have applications in a future airspace management system. Institutional, economic, and transitional issues are assessed from United States and worldwide perspectives.

List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00

DO-192, Minimum Operational Performance Standards for Airborne ILS Glide Slope Receiving Equipment Operating within the Radio Frequency Range of 328.6-335.4 Megahertz

Issued 7-18-86 ♦ Superseded DO-132A ♦ Prepared by SC-153

Postulates operational goals and applications, and recommends standards and test procedures for airborne ILS glide slope receiving equipment. Coordinated with EUROCAE.

TSO-C34e provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-191, Minimum Operational Performance Standards for Airborne Thunderstorm Detection Equipment

Issued 5-16-86 ♦ Prepared by SC-154

Defines the capabilities and limitations of the various methods of airborne thunderstorm detection and determines the correlation between the detection of electrical activity, precipitation, and any other phenomena that is measured or detected and likely to be hazardous to flight operations.

TSO-C110a provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

DO-190, Minimum Operational Performance Standards for Airborne Area Navigation Equipment Using Omega/ VLF Inputs

Issued 5-16-86 ♦ Superseded DO-140 ♦ Prepared by SC-137

Postulates operational goals and applications, and recommends standards and test procedures for airborne area navigation equipment (2D and 3D) using Omega/VLF signals. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures. Coordinated with EUROCAE.

TSO-C120 provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00

DO-189, Minimum Operational Performance Standards for Airborne Distance Measuring Equipment (DME) Operating within the Radio Frequency Range of 960-1215 MHz

Issued 9-20-85 ♦ Superseded DO-141 and DO-151A ♦ Prepared by SC-149

Postulates operational goals and applications, and recommends standards and test procedures for airborne distance measuring equipment (DME). It updates the former DME operational characteristics and performance standards for airborne equipment that operates with conventional DME (DME/N) ground facilities and establishes standards for airborne equipment which will operate with both DME/N and precision DME (DME/P) ground facilities. Coordinated with EUROCAE.

TSO-C66c provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00

DO-188, Emergency Locator Transmitter (ELT) Batteries Guidance and Recommendations

Issued 11-13-84 ♦ Prepared by SC-136 Battery Subcommittee

Provides guidelines and recommendations concerning ELT battery construction, storage, and methodology for qualifying replacement batteries. An appendix concerning considerations for design and manufacture of batteries for ELTs is included.

TSO-C91a provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-187, Minimum Operational Performance Standards for Airborne Area Navigation Equipment Using Multi-Sensor Inputs

Issued 11-13-84 ♦ Prepared by SC-137

Postulates operational goals and applications, and recommends standards and test procedures for airborne area navigation equipment (2D and 3D) using multi-sensor inputs. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures. Coordinated with EUROCAE.

TSO-C115b provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00

DO-186A, Minimum Operational Performance Standards for Airborne Radio Communications Equipment Operating within the Radio Frequency Range 117.975-137.000 MHz; Includes Change 1

Issued 10-20-95 ♦ Change 1 Supersedes DO-139, DO-156, DO-157 and DO-186 with Change 1 ♦ Prepared by SC-172

Postulates operational goals and applications, and recommends standards and test procedures for airborne VHF communication transmitters and receivers. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures. Coordinated with EUROCAE and updated to include class E receivers which are able to be used in an 8.33 kHz channel separation environment.

TSO-C37d and TSO-C38d provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$98.40
	All other countries	$135.00
Member Price	US/Canada/Mexico	$39.30
	All other countries	$54.00

e-DO-186A	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$123.00

Change 1 to DO-186A

Issued 9-28-98

This change updates DO-186A with information to make manufacturers aware that 8.33 kHz may be used in some applications. It corrects errors in channel labeling, corrects a frequency value in the cross modulation test procedure,

and clarifies the measurement procedure. The transmitter spectral mask in the frequency range 0 to 2,500 Hz is changed and an error in the antenna efficiency specification is corrected.

RTCA Members No Charge
Non-Members No Charge

Change 1 to e-DO-186A	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	No Charge

DO-185A, Minimum Operational Performance Standards for Traffic Alert and Collision Avoidance System II (TCAS II) Airborne Equipment

Issued 12-16-97 ♦ Prepared by SC-147

This document provides Version Downloadable 7.0 of the TCAS II logic and sets forth the minimum operational performance standards for TCAS II equipment. Among the changes, this Version Downloadable improves the system's surveillance performance and modifies the interference limiting algorithms to account for aircraft densities near airports as well as to permit longer range surveillance. Improvements have been made in tracking Mode S targets and in permitting TCAS to receive the extended Mode S squitter. To preclude repeatedly issuing Traffic Advisories (TA) against the same target, changes have been made to ensure that a target's TA status is maintained in slow closure situations by using more stringent drop criteria. Other changes include credibility checks to ensure integrity of the data being supplied to the collision avoidance logic and additional, more thorough tests for installed equipment.

Volume I contains the rationale for equipment characteristics, minimum performance standards, bench test procedures, and installed equipment performance. Volume II presents the required collision avoidance algorithms in a state chart formulation with informational commentary text. Attachment A provides both high and low level pseudocode representations of the collision avoidance algorithms. The standards and performance requirements in the document ensure that TCAS II is fully interoperable with other elements and equipment of the National Airspace System.

TSO-C119a provided free of charge with purchase of this document.

*** THIS DOCUMENT IS IN A SEARCHABLE CD FORMAT ***

List Price	US/Canada/Mexico	$315.00
	All other countries	$405.00
Member Price	US/Canada/Mexico	$126.00
	All other countries	$162.00

DO-184, Traffic Alert and Collision Avoidance System (TCAS) I Functional Guidelines

Issued 5-13-83 ♦ Prepared by SC-147

Sets forth minimum requirements, and describes the various elements of TCAS I. Discusses both passive and active TCAS I applications. Provides the minimum performance requirements for electromagnetic compatibility for an active TCAS I and test procedures for both active and passive systems. Appendix A addresses cross-link advisories.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-183, Minimum Operational Performance Standards for Emergency Locator Transmitters-Automatic Fixed-ELT (AF), Automatic Portable-ELT (AP), Automatic Deployable-ELT (AD), Survival-ELT (S) Operating on 121.5 and 243.0 Megahertz

Issued 5-13-83 • Superseded DO-145, DO-146 and DO-168Prepared by SC-136

Postulates operational goals and applications, and recommends standards and test procedures for emergency locator transmitters. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures.

TSO-C91a provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-182, Emergency Locator Transmitter (ELT) Equipment Installation and Performance

Issued 11-17-82 • Prepared by SC-136

Provides analyses of ELT performance in regard to false alarms and activations in crash environments; provides criteria and guidelines for placement and installation of ELTs in aircraft; reports on ELT system performance in a variety of typical installations; and provides specific recommendations on all of the above standards.

List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00

DO-181C, Minimum Operational Performance Standards for Air Traffic Control Radar Beacon System/Mode Select (ATCRBS/Mode S) Airborne Equipment

Issued 6-12-01 • Superseded DO-181B • Prepared by SC-187

This document updates DO-181B by incorporating appropriate material to recognize changes made by ICAO to the Mode S System SARPs and the Mode S Subnetwork SARPs.

List Price	US/Canada/Mexico	$250.00
	All other countries	$312.50
Member Price	US/Canada/Mexico	$100.00
	All other countries	$125.00

e-DO-181C	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$312.50

DO-180A, Minimum Operational Performance Standards for Airborne Area Navigation Equipment Using a Single Collocated VOR/DME Sensor Input

Issued 5-24-90 • Superseded DO-180 • Prepared by SC-137

Postulates operational goals and applications and recommends standards and test procedures for airborne area navigation equipment (2D and 3D) using sensor inputs from a single collocated VOR/DME station. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures. Coordinated with EUROCAE.

List Price	US/Canada/Mexico	$75.00
	All other countries	$105.00
Member Price	US/Canada/Mexico	$30.00
	All other countries	$42.00

DO-179, Minimum Operational Performance Standards for Automatic Direction Finding (ADF) Equipment

Issued 5-13-82 • Superseded DO-137 and DO-142 • Prepared by SC-146

Postulates operational goals and applications and recommends standards and test procedures for airborne automatic direction finding equipment. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures. Coordinated with EUROCAE.

TSO-C41d provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-178B, Software Considerations in Airborne Systems and Equipment Certification

Issued 12-1-92 • Advisory Circular • Superseded DO-178A • Errata Issued 3-26-99 • Prepared by SC-167

Provides guidance for determining, in a consistent manner and with an acceptable level of confidence, that the software aspects of airborne systems and equipment comply with airworthiness requirements.

List Price	US/Canada/Mexico	$128.40
	All other countries	$175.00
Member Price	US/Canada/Mexico	$51.30
	All other countries	$70.00

e-DO-178B	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$160.50

DO-177, Minimum Operational Performance Standards for Microwave Landing System (MLS) Airborne Receiving Equipment

Issued 7-17-81 • Change 1 • Change 2 issued 9-19-86 • Prepared by SC-139

Postulates operational goals and applications, and recommends standards and test procedures for use of Microwave Landing System (MLS) airborne receiving equipment. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures. Coordinated with EUROCAE.

TSO-C104 provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00

DO-176, FM Broadcast Interference Related to Airborne ILS, VOR and VHF Communications

Issued 11-18-81 • Prepared by SC-141

Reviews the various aspects of the problem of commercial FM broadcast stations contributing to the interference of airborne systems. Recommends improved intra-governmental coordination procedures and recommends steps to limit growth of the problem, to reduce the problem with installed receivers, and to minimize the problem with new receivers or installations.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-175, Minimum Operational Performance Standards for Ground-Based Automated Weather Observation Equipment

Issued 1-23-81 ♦ Prepared by SC-143

Postulates operational goals and applications, recommends standards and test procedures for ground-based automated weather observation equipment. Provides system characteristics for users, designers, manufacturers, and installers of such equipment of interest to various users, including airfield operations, meteorological services, aviation administrations, airplane and helicopter operators, etc. Includes test conditions and procedures for installed system performance and operational characteristics with test procedures.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-174, Minimum Operational Performance Standards for Optional Equipment which Displays Non-Radar-Derived Data on Weather and Ground Mapping Radar Indicators

Issued 3-20-81 ♦ Prepared by SC-133

Postulates operational goals and applications, and recommends standards and test procedures for use of weather and ground mapping radar indicators for display of non-radar graphic and/or alphanumeric data. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures.

TSO-C105 provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-173, Minimum Operational Performance Standards for Airborne Weather and Ground Mapping Pulsed Radars

Issued 11-19-80 ♦ Corrigendum/Errata/Change 1 ♦ Superseded DO-134 ♦ Prepared by SC-133

Postulates operational goals and applications; recommends standards and test procedures for airborne weather and ground mapping pulsed radars. Takes into account new radar technology and is applicable to both large aircraft and general aviation aircraft systems. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures.

TSO-C63c provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-172, Minimum Operational Performance Standards for Airborne Radar Approach and Beacon Systems for Helicopters

Issued 11-19-80 ♦ Change 1 ♦ Prepared by SC-133

Postulates operational goals and applications, and recommends standards and test procedures for Airborne Radar Approach (ARA) systems for helicopters, particularly when operating under IFR, IMC conditions, or at night, including

standards for the ground-based radar beacon. Includes test conditions and procedures for installed equipment performance and operational characteristics with test procedures.

TSO-C102 provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
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Member Price	US/Canada/Mexico	$19.20
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DO-171, Recommendations on Policies and Procedures for Off-the-Shelf Electronic Test Equipment Acquisition and Support

Issued 1-25-80 ♦ Prepared by SC-134

Provides rationale and recommendations for various conditions and procedures that could provide major benefits to those responsible for drafting legislation, policies, procedures, and guidelines for the acquisition and support of electronic test equipment.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-169, VHF Air-Ground Communication Technology and Spectrum Utilization

Issued 7-20-79 ♦ Prepared by SC-140

Reports on VHF (118-136 MHz) spectrum utilization including the investigation of modulation techniques and reduced channel separation. Identifies problem areas and recommends, among other things, use of reduced channel spacing on a selective basis.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-167, Airborne Electronics and Electrical Equipment Reliability

Issued 9-16-77 ♦ Prepared by SC-130

Provides a tutorial discussion on reliability related to aircraft accidents. Discusses airborne electronic equipment failures and means of reducing failures, and presents arguments against use on MTBF and MTBR as reliability measures for use in RTCA MPSs and FAA TSOs.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-166, Microwave Landing System (MLS) Implementation

Issued 7-15-77 ♦ Prepared by SC-125

Reports on a study of develop user recommendations for a national implementation policy for MLS as the primary landing system in service by the year 2000. Volume I provides recommendations on how best to transition from ILS to MLS; recommends implementation strategy and a national implementation policy, which are summarized in a findings

and recommendations chapter. Volume II includes six appendices, which are the reports of working groups in special categories such as Benefits, Airborne Systems Operational Capabilities, and Civil System Costs.

Vol. I List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00
Vol. II List Price	US/Canada/Mexico	$87.00
	All other countries	$113.10
Member Price	US/Canada/Mexico	$34.80
	All other countries	$45.20

DO-165, Initial Report on Civil Aviation Frequency Spectrum Requirements-1980- 2000

Issued 5-27-76 ♦ Prepared by SC-129

Provides a comprehensive report on civil aviation's frequency requirements. Appendices recommend revisions to the ITU Table of Allocations and the footnotes thereto. Provides justification for stated operational requirements; provides an aviation forecast.

List Price	US/Canada/Mexico	$63.00
	All other countries	$90.00
Member Price	US/Canada/Mexico	$25.20
	All other countries	$36.00

DO-164A, Minimum Performance Standards-Airborne Omega Receiving Equipment

Issued 9-21-79 ♦ Superseded DO-164 ♦ Prepared by SC-138

Recommends standards and test procedures for airborne Omega Navigation Receivers, Systems Sensors, and Navigation Systems. Also included are operational characteristics. Appendices include conditions for testing, detailed test procedures, and a description of Omega Error Mechanisms.

TSO-C94a provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-163, Minimum Performance Standards-Airborne HF Radio Communications Transmitting and Receiving Equipment Operating within the Radio-Frequency Range of 1.5 to 30 Megahertz

Issued 3-19-76 ♦ Errata ♦ Superseded DO-48A and DO-49A ♦ Prepared by SC-131

Recommends standards and test procedures for HF/SSB receivers and transmitters designed to operate in a 3 kHz channel environment. Also includes standards for the provision of AM equivalent mode of operation. Appendices include conditions for testing and detailed test procedures.

TSO-C31d and TSO-C32d provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-162, Report on Air-Ground Communications-Operational Considerations for 1980 and Beyond

Issued 10-17-75 ♦ Prepared by SC-120

Provides an analysis of air-ground communications requirements anticipated for the post-1980 time frame. Includes definitions of US aviation system and future trends, requirements, systems concepts, and recommendations. This is a companion report to RTCA Paper No. 128-72/EC-671 issued 8-18-72, entitled Proposed US National Aviation Standard for the VHF A/G Communications System.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-161A, Minimum Performance Standards-Airborne Ground Proximity Warning Equipment

Issued 5-27-76 ♦ Superseded DO-161 ♦ Prepared by SC-128

Recommends standards and test procedures for Ground Proximity Warning Equipment. This is a revision of DO-161 and includes changes (1 & 2) to that document and other improvements suggested by operating experience. Appendices include envelopes of conditions for warning, conditions for testing, and detailed test procedures.

TSO-C92c provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-160D, Environmental Conditions and Test Procedures for Airborne Equipment

Issued 7-29-97 ♦ Superseded DO-160C, Changes 1, 2 & 3 ♦ Prepared by SC-135

Standard procedures and environmental test criteria for testing airborne equipment for the entire spectrum of aircraft from light general aviation aircraft and helicopters through the "Jumbo Jets" and SST categories of aircraft. The document includes 25 Sections and three Appendices. Examples of tests covered include vibration, power input, radio frequency susceptibility, lightning, and electrostatic discharge. Coordinated with EUROCAE, RTCA/DO-160D and EUROCAE/ED-14D are identically worded.

DO-160D is recognized by the International Organization for Standardization (ISO) as de facto international standard ISO-7137.

List Price	US/Canada/Mexico	**$**195.00
	All other countries	**$**270.00
Member Price	US/Canada/Mexico	**$**78.00
	All other countries	$108.00

e-DO-160D	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$243.75

Change 1 to DO-160D

Issued 12-14-00

This change provides revised text for Section 8.0 – Vibration, Section 20.0 – Radio Frequency Susceptibility (Radiated and Conducted) and Appendix C – Change Coordinators.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 1 to e-DO-160	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
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Change 2 to DO-160D

Issued 6-12-01

This change provides revised text for Section 16.0 – Power Input, Section 18.0 – Audio Frequency Conducted Susceptibility – Power Inputs and Appendix A – Environment Test Identification.

Section 16 – *Power Input*
This section proposes test modifications to address the issues of harmonic distortion and variable frequency AC buses. The revised power test requirements include:

- Requirements for variable frequency systems similar to constant frequency systems.
- Added designation H for equipment that is tested for current harmonic emission.
- Deletion of Category E equipment.
- Introduction of requirements for normal frequency transients.
- Revision of existing tables and addition of new tables for current harmonic emissions.

Section 18 – *Audio Frequency Conducted Susceptibility – Power Inputs*
This section provides revisions to ensure harmony with the changes to Section 16 and consistency with the sweep speed testing procedures in Section 20.

Appendix A – *Environment Test Identification*
This Appendix provides revisions to ensure harmony with the changes to Sections 16 and 18.

List Price	US/Canada/Mexico	$48.00
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Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Change 2 to e-DO-160D	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$60.00

DO-158, Minimum Performance Standards-Airborne Doppler Radar Navigation Equipment

Issued 10-17-75 ♦ Superseded DO-98 & DO-104 ♦ Prepared by ICG-13

Recommends standards and test procedures for Airborne Doppler Radar Navigation Equipment. Appendices include conditions of testing and detailed test procedures. Coordinated with EUROCAE.

TSO-C65a provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-155, Minimum Performance Standards-Airborne Low-Range Radar Altimeters

Issued 1-11-74 ♦ Superseded DO-123 ♦ Prepared by SC-115 (ICG-2)

Recommends standards and test procedures for those characteristics of an Airborne Low-Range Radar Altimeter that are essential for its operation in applications to provide measured height above terrain for obstruction clearance and landing. Coordinated with EUROCAE. *TSO-C87 provided free of charge with purchase of this document.*

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-154, Recommended Basic Characteristics for Airborne Radio Homing and Alerting Equipment for Use with Emergency Locator Transmitters (ELTs)

Issued 3-9-73 ♦ Prepared by SC-124

Recommends basic system characteristics and provides test and guidance material for Airborne Radio Homing and Alerting Equipment.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-152, Minimum Operational Characteristics-Vertical Guidance Equipment Used in Airborne Volumetric Navigational Systems

Issued 3-17-72 ♦ Appendix D 4-23-74 ♦ Prepared by SC-116E

Part I defines the concepts, philosophy, and development of MOCs for airborne systems, and Part II covers the MOCs for vertical guidance equipment used in airborne volumetric navigation systems, including system characteristics; provides information for demonstration of compliance and guidance accuracy analysis. Appendix D provides a VOR/DME/Altimeter vertical guidance analysis.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-148, A New Guidance System for Approach and Landing

Issued 12-18-70 ♦ Volume II Change ♦ Prepared by SC-117

Defines a system concept and technical description (signal format) for a new precision instrument approach and landing guidance system (LGS) intended to satisfy the varied operational needs of different classes of aviation users, civil and military, in the United States and abroad. Volume I is an 80-page summary of findings and recommendations. Volume II is a 400-page compilation of the milestone Special Committee Reports, including the Tentative Operational

Requirements, the Report of the Techniques Assessment Team, and the Report of the Signal Format Development Team.

Vol. I List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00
Vol. II List Price	US/Canada/Mexico	$87.00
	All other countries	$113.10
Member Price	US/Canada/Mexico	$34.80
	All other countries	$45.20

DO-144, Minimum Operational Characteristics-Airborne ATC Transponder Systems

Issued 3-12-70vChange 1 ♦ Prepared by SC-116B

Part I defines the concepts, philosophy, and development of MOCs for airborne systems. Part II covers the MOCs for Airborne ATC Transponder Systems, including system characteristics, and provides information for demonstration of compliance and guidance material.

TSO-C74c provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-143, Minimum Performance Standards-Airborne Radio Marker Receiving Equipment Operating on 75 MHz

Issued 3-12-70 ♦ Superseded DO-57A ♦ Prepared by SC-115 (ICG-7)

Recommends standards and test procedures for Airborne Radio Marker Receiving Equipment. Coordinated with EUROCAE.

TSO-C35d provided free of charge with purchase of this document.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-136, Universal Air-Ground Digital Communication System Standards

Issued 3-7-68 ♦ Amended and superseded portions of DO-122 ♦ Prepared by SC-110 & SC-111

Recommends universal digital standards for linking aircraft into the ground communications and data processing environment of the air traffic control system, airlines, and military management information systems.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-127, Standard Procedure for the Measurement of the Radio-Frequency Radiation from Aviation Radio Receivers Operating within the Radio-Frequency Range of 30-890 Megacycles

Issued 4-15-65 • Prepared by SC-96

Recommends standards and test procedures for use by manufacturers of aviation receivers in making necessary radiation measurements using the Far-Field method. In addition, the report discusses two alternative methods of performing such measurements using the Near-Field method.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-117, Standard Adjustment Criteria for Airborne Localizer and Glide Slope Receivers

Issued 3-14-63 • Errata • Prepared by SC-98

Recommends procedures for adjustment of Airborne Glide Slope and Localizer Receivers.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-88, Altimetry

Issued 11-1-58 • Issued Appendix I 5-15-59 • Prepared by SC-70

Reports on studies of the problems associated with the measurement of aircraft altitude. States requirement that would permit all aircraft to maintain assigned heights within specific limits as related to terrain clearance and the safe vertical separation of aircraft in flight. Appendix I reports on Meteorological Aspects of Pressure Altimetry.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
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DO-62, Calibration Procedures-Test Standard Omni-Bearing Selectors and Omni-Bearing Selector Test Sets

Issued 12-2-54 • Prepared by SC-61

Recommends procedures to aid operators of aircraft radio service stations in the Calibration of Test Standard Omni-Bearing Selectors and Omni-Bearing Selector Test Sets used in testing and adjusting VOR receivers and their associated Omni-Bearing Selectors.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-56, VOR Test Signals

Issued 4-15-54 ♦ Prepared by SC-60

Describes methods for determining, in an aircraft, the accuracy of VOR bearing indications. The causes of VOR bearing error due to VOR receiver malfunctioning are analyzed.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

DO-52, Calibration Procedures for Signal Generators used in the Testing of VOR and ILS Receivers

Issued 12-8-53 ♦ Prepared by SC-61

Recommends procedures for testing and calibrating signal generators used in the servicing of airborne VOR and ILS receivers. The accuracy of the components of simulated VOR and ILS signals is stated for signal generators calibrated as described.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Free Flight Reports
Other than Task Force 3 Report

National Airspace System Concept of Operations

Issued 12-13-00 ♦ Approved by the Free Flight Steering Committee

This publication is an update that supercedes the previously published *Government/Industry Operational Concept for the Evolution of Free Flight, Edition 2*. This document is intended as a guide for the FAA and user community to coordinate development and implementation activities for air traffic services and operational capabilities within the NAS. The evolution of capabilities for three timeframes is described:

- Near Term, through 2005
- Mid Term, 2005 – 2010
- Far Term, 2010 – 2015

Concepts are discussed from environmental, airspace user, and service provider perspectives for all phases of flight. The concept will serve as a living document and will be the subject of regular review and updates to reflect changes in FAA and user strategy.

List Price	US/Canada/Mexico	$52.50
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Member Price	US/Canada/Mexico	$21.00
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e-National Airspace System ConOps	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$65.65

National Airspace System Concept of Operations, Addendum 4: Free Flight Phase 2

Issued 12-13-00 ♦ Approved by the Free Flight Steering Committee

Addendum 4 provides detail for the Free Flight Phase 2 recommendations made to the Free Flight Steering Committee in December 1999. Implementation strategies are recommended for TMA, URET, pFAST, and CPDLC and the recommendation for CDM is refined. Priority research and development initiatives are identified as well as the

need for a high altitude airspace structure to accommodate more Free Flight activity. Operational scenarios are included. Appendix B of this publication documents the issues and problem-based analyses used to develop the FFP2 recommendations, and summarizes the capabilities recommended for the 2003-2005 period.

List Price	US/Canada/Mexico	$52.50
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Member Price	US/Canada/Mexico	$21.00
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e-National Airspace System ConOps Addendum 4	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$65.65

Government/Industry Operational Concept for the Evolution of Free Flight, Edition 2

Issued 8-16-00 ♦ Approved by the Free Flight Steering Committee

Edition 2 of the Government/Industry Operational Concept combines two previous documents:

- Free Flight Steering Committee, *Government/Industry Operational Concept for the Evolution of Free Flight*
- Federal Aviation Administration, *Concept of Operations for the National Airspace System in 2005*

This combined document provides the aviation community with a single, agreed to Operational Concept from the perspectives of National Airspace System (NAS) users and service providers. The concepts provided herein cover the transition of the current NAS from the near term through the far-term time when mature Free Flight occurs. It is intended to incorporate the needs and requirements of NAS users and service providers and to serve as the basis for an incremental and a benefits-driven approach towards Free Flight. It is also intended to form the basis for both the Federal Aviation Administration (FAA) and the user community to plan procedural, investment and architectural decisions that will provide the operational capabilities needed to achieve Free Flight.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

Government/Industry Operational Concept for the Evolution of Free Flight, Addendum 3.1: Roadmap for Surveillance Modernization

Issued 8-16-00 ♦ Approved by the Free Flight Steering Committee

This addendum presents a consensus for the evolutionary modernization of surveillance capabilities in the National Airspace System (NAS) and is based on the operational objectives identified in the RTCA document, Addendum 3: Surveillance. Both documents are driven by the need to improve aviation safety, capacity and efficiency. This roadmap provides a set of target architecture characteristics that include delivery of a common surveillance "picture" to ATC service providers, flight crews, and airport/airline operational personnel; the utilization of "enriched" surveillance data for decision support tools, and reliance on ADS-B as the "cornerstone" of the future surveillance architecture. This document also identifies key business case considerations and activities that will appropriately justify both FAA and industry investment commitments.

List Price	US/Canada/Mexico	$52.50
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Member Price	US/Canada/Mexico	$21.00
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e-Gov/Ind OpCon Addendum 3.1	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$65.65

Government/Industry Operational Concept for the Evolution of Free Flight, Addendum 3: Surveillance

Issued 8-16-00 ♦ Approved by the Free Flight Steering Committee

The Surveillance Addendum documents one of the essential elements of Free Flight and describes future capabilities that cover a period of approximately the next two decades. The document focuses on the operational use of surveil-

lance, not the technical or architectural aspects of providing the information to those needing it. The approach described transitions from the current radar/interrogator baseline of surveillance information to a digital information environment that encompasses air and ground operations. This approaches envisions providing shared real-time surveillance information to service providers (using automation to manage aircraft separation in all operation) and to pilots (utilizing new technology to aid in those aircraft management and separation services).

List Price	US/Canada/Mexico	$52.50
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Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

e-Gov/Ind OpCon Addendum 3	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
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Government/Industry Operational Concept for the Evolution of Free Flight
Addendum 2: Candidate Recommendations on Near Term Procedural Enhancements, 1998 – 2002

Issued 8-19-98 ♦ Approved by the Free Flight Steering Committee

This document offers 25 procedural changes that can be made in the near term, 1998-2002. These proposals will provide benefits to NAS users and service providers with minimal dependence on new systems. The focus is on changes to today's operations, making better use of what is currently available. Addendum 2 also outlines a process for keeping stakeholders involved.

List Price	US/Canada/Mexico	$52.50
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Member Price	US/Canada/Mexico	$21.00
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e-Gov/Ind OpCon Addendum 2	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$65.65

Government/Industry Operational Concept for the Evolution of Free Flight,
Addendum 1: Free Flight Phase 1 Limited Deployment of Select Capabilities (URET, TMA (SC), pFAST, CPDLC, CDM, SMA)

Issued 8-19-98 ♦ Approved by the Free Flight Steering Committee

This document details the concept of operations for FFP1 Core Capability Limited Deployment (CCLD). The focus is on near-term implementations, 1998 - 2002, with an emphasis on scenarios that illustrate the functions and enhancements of FFP1 capabilities. This document is the basis for both the FAA and the user community plans for procedural, investment, and architectural decisions that will make FFP1 a reality.

List Price	US/Canada/Mexico	$52.50
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Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

e-Gov/Ind OpCon Addendum 1	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$65.65

Free Flight Action Plan

Issued 8-15-96

The Free Flight Action Plan outlines current and planned activities leading to the implementation of Task Force 3 recommendations, provides the points of contact and phone numbers for each initiative, and establishes intermediate milestones approved by the Free Flight Steering Committee on August 15, 1996.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

e-Free Flight Action Plan	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$65.65

Free Flight Action Plan Update 1

Issued 4-2-98

Provides updated status on Free Flight Recommendations listed in the original RTCA Free Flight Action Plan.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

e-Free Flight Action Plan Update 1	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$65.65

Free Flight Action Plan Update 2

Issued 12-10-98

Provides updated status on Free Flight Recommendations listed in the original RTCA Free Flight Action Plan.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

e-Free Flight Action Plan Update 2	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$65.65

Task Force Reports

Final Report of the RTCA Task Force 4 Certification

Issued 2-26-99

Prepared by the RTCA Certification Task Force

Any improvements in safety, capacity, or efficiency will require some form of change. Prior to operationally implementing the improvement, equipment, procedures, and people will need to be "certified." Experience, both prior to and during the Task Force, indicate that significant benefits will accrue to the entire aviation community if the process is "systems oriented" and if refinements are made to reduce the time and cost of the process thereby expediting the availability of the operational enhancements.

The Final Report of the RTCA Task Force 4 Certification underscores the critical role of certification in achieving FAA's safety and modernization goals and provides 15 consensus-based recommendations for improving the certification process.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

e-Final Report of the RTCA Task Force 4 Certification	
Electronic Version Downloadable From RTCA's Web Site	
Member	No Charge
Non-Member	$65.65

Final Report of RTCA Task Force 3 Free Flight Implementation

Issued 10-26-95 ♦ Prepared by TF3

The Free Flight Implementation Task Force Report underscores the need for changes in the air traffic system and emphasizes that changes should be both benefits driven and implemented in steps, such that incremental changes lead immediately to incremental benefits.

This report provides the definition of free flight, addresses "dynamic density" plus other operational initiatives, and recommends a transition strategy based on the time-phased implementation of new procedures and technology. The strategy provides benefits to the entire air transportation community. The strategy also simultaneously moves the

community from an analog communication, ground-based navigation air traffic control system to a digital communication, ground- and space-based navigation air traffic management system that makes increasingly heavier use of decision support systems to help air traffic service providers meet their important responsibilities.

List Price	US/Canada/Mexico	$142.80
	All other countries	$202.50
Member Price	US/Canada/Mexico	$57.00
	All other countries	$81.00

e-Final Report of RTCA Task Force 3 Free Flight Implementation
Electronic Version Downloadable From RTCA's Web Site

Member	No Charge
Non-Member	$178.50

RTCA Task Force 3 Interim Report on Free Flight Implementation

Issued 8-28-95 ♦ Prepared by TF3

The RTCA Task Force 3 Free Flight Implementation Interim Report summarizes the 44 recommendations that had grown out of the group's deliberations as of August 1995. The recommendations are initially grouped by time frame: near-term, present - 1997; mid-term, 1998-2000; and long-term, beyond 2000. Of the 44 Interim Report recommendations, 35 are included in the near-term, six in the mid-term and three in the long-term. Within each time frame, recommendations are aggregated by category: Procedural; Technology Application; New Concepts; and Studies and Investigations. All time frames do not include all categories of recommendations.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

e-RTCA Task Force 3 Interim Report on Free Flight Implementation
Electronic Version Downloadable From RTCA's Web Site

Member	No Charge
Non-Member	$65.65

Report of the RTCA Board of Directors' Select Committee on Free Flight

Issued 1-18-95 ♦ Prepared by the RTCA Board of Directors' Select Committee on Free Flight

This report summarizes requirements, flight operations, and expected user benefits attendant with Free Flight and will be used as the basis for follow-on work leading to concept implementation.

List Price	US/Canada/Mexico	$52.50
	All other countries	$80.00
Member Price	US/Canada/Mexico	$21.00
	All other countries	$32.00

e-Report of the RTCA Board of Directors' Select Committee on Free Flight
Electronic Version Downloadable From RTCA's Web Site

Member	No Charge
Non-Member	$65.65

RTCA Task Force 1 Report on Global Navigation Satellite System (GNSS) Transition and Implementation Strategy

Issued 9-18-92 ♦ Prepared by TF1

The RTCA Task Force Report on Global Navigation Satellite System (GNSS) Transition and Implementation Strategy concludes that: the entire user community is enthusiastic about the operational benefits to be derived from the use of GNSS, basic satellite navigation technology needed to achieve an early GNSS operational capability is available, there are no institutional issues that should preclude early implementation, the transition to operational use should

begin almost immediately, should be user driven and should occur in an evolutionary manner, and additional action should begin now to expand on initial operational capabilities.

List Price	US/Canada/Mexico	$120.00
	All other countries	$157.00
Member Price	US/Canada/Mexico	$48.00
	All other countries	$62.80

e-RTCA Task Force 1 Report on Global Navigation Satellite System (GNSS) Transition and Implementation Strategy
Electronic Version Downloadable From RTCA's Web Site

Member	No Charge
Non-Member	$150.00

RTCA Task Force 2 Report on the Transition to Digital Communications

Issued 12-20-93 ♦ Prepared by TF2

The Transition to Digital Communications Task Force Report concludes that the aviation community urgently needs the economic benefits that can flow from the use of digital communications. Technology is available. Broad-based implementation of digital communications will hinge on international cooperation, a close and effective government partnership devoted to fielding new equipment plus a priori assurances from government that aircraft operators will obtain a prompt and significant return on their investment in new technology.

List Price	US/Canada/Mexico	$135.00
	All other countries	$180.00
Member Price	US/Canada/Mexico	$54.00
	All other countries	$72.00

e-RTCA Task Force 2 Report on the Transition to Digital Communications
Electronic Version Downloadable From RTCA's Web Site

Member	No Charge
Non-Member	$168.75

Other RTCA Publications

Portable Hand-Held GPS Receivers-What You Should Know

Issued 9-21-93 ♦ Prepared by SC-179

Presented in an encapsulated form, information on usage, antenna mounting, and other considerations including signal interference, power, and answers to commonly asked questions. The information is applicable to the models of portable hand-held GPS receivers that do not meet TSO C129 standards.

Pamphlet: $4.00

The Authority of Agreement—A History of RTCA

William G. Osmun, a professional writer of note and longtime observer of RTCA activity, researched and wrote this volume under contract with RTCA. In this history, Osmun traces the effort of engineers, pilots, technicians, and other aeronautical experts to forge agreement out of conflicting desires and in the face of changing technology, government reorganization, and the tremendous growth of worldwide air service. For reference, appendices include a brief chronology of RTCA and tabulate the work of RTCA Special Committees and their chairmen, membership of the Executive Committee, Technical Advisors, and International Associates.

List Price	US/Canada/Mexico	$48.00
	All other countries	$75.00
Member Price	US/Canada/Mexico	$19.20
	All other countries	$30.00

Proceedings of RTCA Annual Symposia

2000 2000 ATC Modernization – Achieving New Operational Capabilities (and it's more than equipment)

1999 Modernization: Aviation's Challenge and Opportunity for the New Millennium

1998 Operations, Certification, & Standards: Cornerstones for the Future

1997 Free Flight - New Concepts, A New Architecture, New Opportunities - NOT AVAILABLE

1996 Working Together to Deliver Free Flight

1995 International Cooperation and Standards—Keys to Enhancing the Capacity, Efficiency, and Safety of Air Transportation

1994 Implementing Air Traffic Management through Government/Industry Partnerships—Accomplishments, Challenges, and Opportunities

1993 Implementing Air Traffic Management—A Systems Approach for the 21st Century

Note: Orders for the above and earlier Proceedings are subject to availability.

List Price	US/Canada/Mexico	$75.00
	All other countries	$105.00
Member Price	US/Canada/Mexico	$30.00
	All other countries	$42.00

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  Issued 9-28-98
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